# THE SHALE DISTRICT OF WEST-CALDER

In our previous article on the shale district, we showed that Bathgate owes its prosperity to the discovery of the Boghead mineral. Fifteen years' steady and uninterrupted progress followed the establishment of the paraffine works in that district. Once fairly begun, they waxed gradually in size and importance until they became the centre of one of the recognised industrial occupations of the country. Great, however, as has been the success of this new branch of manufactures suddenly opened up in the heart of the Scotch coalfield, there are not wanting signs to prove that the paraffine oil trade is yet in its infancy. At present it may be said to be in a transition state, and on the eve of extensive and still more rapid development. The perfection attained in its manufacture, and the moderate price at which it is sold, have had the effect of introducing it into the markets of distant countries, and the consumption has consequently been yearly increasing.

To meet the large demand that has arisen, Mr James Young is at present engaged erecting new chemical works at West Calder. These, when completed, will be the largest in the kingdom, being designed to cover several acres of ground more than the establishment at Bathgate. The works are at present only in the preliminary stage of construction, but they are being pushed forward with vigour, and it is expected that by the autumn they will be well advanced. The new manufactory is being built on the estate of Addiewell. This estate, as well as a large portion of the surrounding district, abounds in bituminous shales, which will afford an abundant and constant supply of raw material to the stills. The new buildings are in course of erection in a series of fields about a mile from the village, to which convenient access is gained from the turnpike road. Viewed even in its present condition, with heaps of building material scattered in every direction, the site of the paraffine establishment gives sufficient token of the nature and extent of the works in process of construction. The evidences of labour everywhere surrounding the visitor bear abundant testimony of the progress of some considerable undertaking. The fields, in many parts still bearing traces of recent harvests in the shape of stubble, are cut up in all directions with newly formed rough metal roads. Huge "parks" of shale and coal suggest ample supply for the capacious retorts about to be placed in position. Wooden huts, whence proceed mingled sounds of labour, denote that the artificers are already industriously intent in executing the many preliminary operations necessary to the commencement of an extensive enterprise. Here and there piled upon the ground, gigantic cast metal cauldrons and stills give a visionary notion of the size and capacity of the apparatus to be employed in the new works. Some half-dozen chimney-stalks mark the mouths of the coal-pits that are in full operation. Gangs of labourers scattered in different directions impart life and animation to the scene as they busily prosecute their various callings. A general view of the ground, coupled with the prevailing activity and the heaps of building materials that cumber the fields, are suggestive of the foundation of a new town.

A more narrow inspection shows that the ground has been elaborately planned and laid out, and that the new establishment will not only be upon a larger scale than any in the country, but will be constructed on principles admitting of the introduction of the latest improvements in practical chemistry. The leading ideas are, to economise labour by the extensive employment of machinery, and to facilitate production by the convenient arrangement of the different departments. The stills and retorts will be of gigantic dimensions compared with those at Bathgate, and will be fitted up on an improved and more convenient principle. The furnaces are at present in course of construction, and considerable progress has been made towards the erection of the principal buildings. The works are to be divided into two almost equal parts by a broad open way running like a street down the centre. Down this street a branch line of railway will be led, upon which a small steam locomotive will be placed. This line, laid down so as to form direct communication with the coal-pits, will afford the means of conveying the shale to

the retorts with little trouble, and can be used generally for the conveyance of goods to and fro within the works. Connected, again, with this railway is another double line, now in process of formation, intended to strike across the country and join the Edinburgh and Bathgate Railway. This will prove of great importance in the development of the new establishments. Whilst providing an easy and ready outlet for the goods produced, it will also bring the works at Bathgate and West-Calder into communication. One great advantage of this will be to enable Mr Young to transport shale direct from his own coal-pits at the latter to the former place when occasion requires.

About 200 men are employed at West-Calder pushing forward the works. A larger number would be engaged to hasten their completion were it not for the limited house accommodation in the neighbourhood. The village itself is very small, and every available lodging has been taken possession of. The opening of four or five coal-pits which was the first step taken by Mr Young in the prosecution of his new enterprise, brought an unexpected influx of pitmen into the district. Subsequent arrivals of masons, brickmakers, joiners, blacksmiths, and labourers taxed to the utmost the accommodation which the cottages of the hamlet provided, and it was consequently found to be somewhat difficult to induce men to come to a locality where they could not get themselves properly housed. To remove this obstacle, Mr Young addressed himself at the outset. A long row of neat brick cottages was erected without delay upon his own estate, and these have been given over to the skilled mechanics employed at the works. In addition to these, two rows of commodious wooden huts, capable of accommodating about 130 men, have just been completed and taken possession of by the navvies. A good many cottages and houses have also been recently built at the village to meet the want that existed, and which promises to be soon renewed.

Much time and expense will be saved in the erection of the new chemical works by the means that have been taken to procure a sufficient and constant supply of bricks. One of the fields in the immediate vicinity yields clay in large quantities; and on this being discovered, Mr Young immediately built a brick-work, which is at present in active operation. Steam machinery is used in one of the departments of this trade, and an apparatus is about to be fitted up to supersede the system of making bricks by hand. This machine is estimated to turn out thirty-five thousand bricks a day and will give facilities for keeping up a constant supply. The whole of the buildings will thus be constructed from bricks manufactured on the spot - an arrangement which, besides being cheaper, will save endless carriage and carting. The brickworks will form a permanent part of the new establishment. In a huge chemical work like the one in process of formation, bricks are constantly in demand. The intense heat applied to the stills soon consumes the brickwork of the furnaces, and necessitates their constant repair. The clay, accordingly, which is so abundant on the estate, will be put to a very useful purpose.

The first care of Mr Young, after having satisfied himself of the presence of shale in the district, was to sink shafts and get the coal-pits in operation. This was accomplished with as little delay as possible, and there are now six pits being worked night and day. These pits are quite close to where the new buildings will stand, and are within a short distance of each other. The deepest of these pits is sixty fathoms, and it contains two seams that are being simultaneously wrought. The topmost consists of shale and the lower one of ordinary fuel. The pits have been in full operation for some time, and a very large quantity of shale and coal has been collected to be ready against the completion of the retorts. As the mineral is brought up from the subterranean galleries, it is piled in vast fields at the mouths of the shafts, small lines of rails being laid down, along which the coal is hurled in trucks, and heaped into squares. There is a considerable difference between the appearance of the shale of West-Calder and the Boghead mineral. The latter is taken from the pits in huge pieces resembling coal, is compact in texture, and of a dull

lustreless colour. The former is procured in thin unequal slabs; its pervading hue being also a dull black, varied by frequent patches of ironstone colour, which give it somewhat the appearance of rusty metal. It is scaly in its formation, and when broken frequently presents a black shining appearance like congealed tar. By the time the works are ready, an immense quantity of shale and coal will be collected to commence operations with; and the pits being within a stone's-throw of the stills, the supply can be easily and continuously kept up.

The importance of such a gigantic establishment as the one being erected, to the district of West-Calder will undoubtedly prove very considerable. It will give an impetus to the prosperity of the place such as was altogether undreamed of some years ago. The character of the locality must in a year or two be greatly altered. The village, at present but little visited, and of no account whatever in the manufactures of the country, promises at no distant date to be the seat of an extensive trade, and the centre of a bustling population. That such will be the case, no one can doubt who has noted the sudden growth of the parish of Bathgate, and the wealth which it has developed; West Calder will start with the advantage of a manufactory several times larger than was the Bathgate one at its commencement. It will have the further advantage of turning out commodities for markets that are now fully established, and the demand of which articles is increasing. To carry on the huge works now being hurried forward, seven or eight hundred men will be requisite; and these, with the floating population which gathers to the scene of all new enterprises, will throw a life and activity into the district that will make it a place of some consequence. Should the event turn out according to promise, the capital of the oil district must in course of time be transferred from Bathgate to West-Calder.

Regarding the duration of the supply of the coal and shale, no fears need at present be entertained. The shale district proper may be said to extend some twenty miles in length, and five in breadth. So far as investigations have yet been made, the mineral seems to be plentiful, and can be procured in sufficient quantities to keep the largest works going. When the present seams at Torbanehill are exhausted, there are still thirty acres of the valuable mineral that have been kept in reserve. Should the Bathgate field, however, become quite worked, out, the shales in the West-Calder district are plentiful enough to remove all fear of the supply suddenly falling short.

According to present appearances, there is a prosperous future for the oil trade of those regions. Great as is the production even now, the increase promises to be very large. As long as the shales hold out the supply of oil is unlimited; and as we are yearly discovering new purposes to which to apply it, and it is becoming cheaper owing to the large quantities manufactured lessening the cost of production, it must come more and more into use as an article of consumptions. Should the shale fields yield the necessary quantity of the raw material we may have ere many years, not a few changes effected by the paraffine manufactures. Oil will be produced at such a moderate rate and so superior to the quality formerly in use that the whale fisheries may suffer. Whether this result follow or not, it is quite apparent that new uses must soon be discovered for an article that can be produced in such large quantities. Mr Young has set himself to the consideration of this problem, and intends to increase as far as possible the number of products derived from shale, and thus greatly extend the sphere of his operations. He proposes to distil coal at a low temperature, and apply the manufactured articles to new purposes. His design is to collect the gaseous portion, and sell it at a cheap rate as a heating and lighting agent. If he carry out his project, a new gas will be introduced and sold for illuminating and other purposes, at a considerably lower rate than at present. The coke, which is the residue of the oil after it passes through the stills, forms excellent smokeless fuel, and a trade in this may be largely developed. The paraffine oil, he thinks, may also come to be advantageously used for the fuel of steamships. Being liquid, it could be stored in out-of-the-way places, thereby

economising space. Its use would also save a staff of firemen and their accommodation on board ship, and the increased space thus gained could be made available for other purposes. He estimates that a steamship in crossing the Atlantic consumes 1600 tons of coal in a ten days' voyage. The Admiralty allowance for a ton of coal is 48 cubic feet. A ton of paraffine oil would go as far as a ton and a half of coal, and would only occupy 36 cubic feet, as against the 72 cubic feet required for a ton and a half of coal. Nor does this idea of substituting oil for coal as the fuel of ships seem chimerical or impracticable. The Duke of Somerset recently expressed a confident hope that the time was approaching when the ships of the navy would carry petroleum as fuel in place of coal. This result realised, the development of the oil trade in Scotland would receive an impetus that would make it rank among the most important of our manufactures. As it is, its production will ever take rank as one of the most wonderful of modern inventions, and the good qualities of the oil will be valued by all who do not love darkness rather than light.

*The Scotsman*, 16 May 1865, page 3